PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project	
Tucannon River and Asotin Creek Riparian Enhancement	
BPA project number	**20018**
Contract renewal date (mm/yyyy)	**New WDFW Project**
Multiple actions? (indicate Yes or No)	**No**
Business name of agency, institution or organization requesting funding	
Washington Department of Fish and Wildlife	
Business acronym (if appropriate)	**WDFW**
Proposal contact person or principal investigator:	
Name	**Steve Martin**
Mailing address	**401 S. Cottonwood**
City, ST Zip	**Dayton, WA 99328**
Phone	**(509) 382-1710**
Fax	**(509) 382-2427**
Email address	**martiny@wwics.com**
NPPC Program Measure Number(s) which this project addresses	
4 4.1.	
FWS/NMFS Biological Opinion Number(s) which this project addresses	
section 4 of the Snake River Salmon Recovery Plan	
Other planning document references	
NMFS Recovery Plan: Recovery Team Report 1994 **NPPC Snake River subbasin production plan 1990** **NMFS Salmon Recovery Plan, 1995** **Annual Implementation Work Plan, Vol I. 1998.** **WY-KAN-USH-MI-WA-KISH-WUT: Tribal Recovery Plan: The Columbia River Anadromous Fish Restoration Plan of the Nez Perce, Umatilla, Warm Springs, and Yakama Tribes**	
Short description	
Riparian Enhancement of the Tucannon River and Asotin Creek at Sites Unqualified for other Publically Funded Salmonid Habitat Restoration Efforts.	
Target species	
Snake River Chinook Salmon (Onchorynchus tshawtscha) **Snake River Steelhead Trout (Onchorynchus mykiss)** **Bull Trout (Salvelinus confluentus)**	

Section 2. Sorting and evaluation

Subbasin
Tucannon River and Asotin Creek subbasins

Evaluation Process Sort

CBFWA caucus		**CBFWA eval. process**		**ISRP project type**	
X one or more caucus		If your project fits either of these processes, X one or both		X one or more categories	
X	Anadromous fish	X	Multi-year (milestone-based evaluation)		Watershed councils/model watersheds
x	Resident Fish		Watershed project eval.		Information dissemination
x	Wildlife				Operation & maintenance
					New construction
					Research & monitoring
				X	Implementation & mgmt
					Wildlife habitat acquisitions

Section 3. Relationships to other Bonneville projects

Umbrella / sub-proposal relationships. List umbrella project first.

Project #	**Project title/description**

Other dependent or critically-related projects

Project #	**Project title/description**	**Nature of relationship**
	Lower Snake River Compensation Plan	Hatchery Steelhead Production potentially affecting mortality of wild Snake River steelhead
9401806	Tucannon Model Watershed Program	Developing aquatic restoration projects on private land. In conjunction, this project proposes to enhance the

		riparian area on private land where other public funded restoration efforts are ineligible.
940185	Asotin Creek Model Watershed Program	Developing aquatic restoration projects on private land. In conjunction, this project proposes to enhance the riparian area on private land where other public funded restoration efforts are ineligible.
	WY-KAN-USH-MI-WA-KISH-WIT: The Columbia River Anadromous Fish Restoration Plan of the Nez Perce, Umatilla, Warm Springs, and Yakama Tribes.	Hatchery Steelhead Production potentially affecting mortality of wild Snake River steelhead.

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?
	New Project for WDFW	

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Identify riparian revegetation sites on each tributary	a	With assistance from technical staff, conservation district staff and local landowners visit each tributary and identify sites that need riparian revegetation
		b	Develop a prioritized list of sites to revegetate on each tributary
		c	Discuss specific site revegetation locations, species to plant, and planting time with landowners.
2	Acquire adequate nursery stock to meet site revegetation requirements	a	Summarize site specific revegetation requirements and determine number of each species to have on-hand in the spring of 2000 for planting as whips in early spring and rooted stock in late spring and summer.
		b	Mark native trees on WDFW and USFS land from which whips may be collected
		c	Prepare the number of whips needed to be planted as rooted stock and root them in biodegradable material (pots, cloth, tubes, etc.).
3	Plant whips and rooted stock woody riparian species on the Tucannon River and Asotin Creek	a	Plant whips at sites in early spring at the existing "water line" and landward of that mark.
		b	Plant rooted stock in late spring and summer at and above the spring "water line", as determined in Obj 3 Task a.
4	Monitor planting success (survival) on the Tucannon River and Asotin Creek	a	In late summer count the number of trees planted as whips and rooted stock and calculate survival rate for each planting technique
5	Present data and results	a	At annual CBFWA, Conservation District, BPA and other agency meetings, provide planting data and results.

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	09/1999	11/1999	Determine site to revegetate and number of trees needed	x	5
2	09/1999	11/1999	Mark native trees from which to cut whips and cut them in early spring	x	30
3	03/2000	08/2000	Plant whips and rooted stock riparian trees	x	50
4	08/2000	09/2000	Count number of trees planted and determine survival	x	10
5	11/2000	12/2000	Present data and findings to watershed groups	x	5
				Total	100

Schedule constraints

Stream flooding in March will prevent us from establishing the spring "water line" from which we determine the riparian woody species elevation to plant.

Completion date

June 2002

Section 5. Budget

FY99 project budget (BPA obligated):	New WDFW Project

FY2000 budget by line item

Item	Note	% of total	FY2000 ($)
Personnel	One full-time Technician 4, and 0.1 FTE project supervisor	28	37,507
Fringe benefits	28.5% of Personnel Costs	8	10,689
Supplies, materials, non-expendable property	Biodegradable pots, compost soil, hardware cloth, lumber, clippers, flagging, waders, etc	11	15,092
Operations & maintenance	Vehicle mileage and equipment repairs	5	7,254
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	Truck with dump bed, small tractor with back hoe, dump trailer, and a hand held gas powered auger.	34	46,234
NEPA costs	NONE		
Construction-related support	NONE		
PIT tags	# of tags:0		
Travel	meetings, seminars, and presentations	1	1,145
Indirect costs	22.5% (excludes capitol equipment)	12	16,130
Subcontractor			
Other			
TOTAL BPA REQUESTED BUDGET			$134,051

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount ($)
WDFW	Native vegetation nursery and building structures to use as nursery location	13%	$20,000
Columbia Conservation District	Consultation, site reviews and landowner solicitations	1%	$2,000
Total project cost (including BPA portion)			$156,051

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget	$79,243			

Section 6. References

Watershed?	Reference
X	Confederated Tribes of the Umatilla Indian Reservation (CTUIR). 1989. Walla Walla Subbasin Salmon and Steelhead Plan. Prepared for the Northwest Power Planning Council. Portland, Oregon.
	Martin, S.W. et. al. 1992. Investigation of bull trout, steelhead trout, and spring chinook salmon interaction in southeast Washington streams. 1991 Annual Report. BPA Project 90-53.
	Washington Department of Fish and Wildlife. 1997. Wild Salmonid Policy - Final Environmental Impact Statement.
	Washington State Natural Resources Cabinet. 1998. Extinction is not an option. A statewide strategy to recover salmon. Working draft.
	National Marine Fisheries Service (NMFS) 1994a. Snake River Recovery Team: Final Recommendations to the National Marine Fisheries Service.
	National Marine Fisheries Service (NMFS) 1994b. Factors for Decline; A supplement to the notice of determination for west coast steelhead under the Endangered Species Act.
	Washington State House Bill 2496.

PART II - NARRATIVE

Section 7. Abstract

Fish habitat in tributaries of the Snake River has been severely degraded by anthropogenic disturbances in the riparian zone. Historically, the Tucannon River and Asotin Creek basins produced substantial runs of both spring chinook salmon and steelhead. Bull trout once thrived in these basins as well. Salmon numbers are now so low in these basins that they are listed as Endangered under the ESA, and bull trout and steelhead were recently listed as Threatened.

Resource planning and aquatic restoration efforts have been undertaken recently in these basins with assistance from the State of Washington (HB 2496) the federal government (Whip, CREP, etc.) and BPA (Tucannon and Asotin Model Watershed Programs). These restoration efforts typically require that the landowner provide a cost share, agree to some land use restriction, or are attached to some other project (instream habitat project, alternative water source, riparian fence project, etc). WDFW fully supports a holistic approach to site restoration, however, seldom are these restoration efforts directed specifically at riparian restoration. For this reason, WDFW proposes a project that establishes riparian vegetation at sites that are either not eligible for other restoration funding, or on which the landowner chooses to avoid restoration efforts that contain too many restrictions and conditions.

The goal of this project is to plant woody riparian species on the Tucannon River and Asotin Creek at sites that have failed to naturally revegetate themselves or that do not quality for other aquatic restoration grants. Methods are simply to prepare whips and rooted stock trees (willow sp. and cottonwood sp.) and plant either by hand, or with the use of small equipment, in the riparian zone of the Tucannon River and Asotin Creek.

Work will occur annually in FY 1999, FY 2000, and FY 2001 with annual updates and a completion report in the spring of 2002. We recognize that water temperatures will not decrease in just three years. The managers must realize that outcomes of passive efforts at riparian restoration, like tree planting, require years, however, with the efforts proposed in this project the river and riparian zone will be much closer to fully functional than if funding agencies continue to focus efforts on active, aggressive attempts at recovering salmonids like artificial production and instream habitat projects.

Although we are focusing our work in the Snake River basin, the potential for other geographical regions in the pacific northwest faced with this issue (conditional use of aquatic restoration funds) to utilize this approach exists.

Section 8. Project description

a. Technical and/or scientific background

The Tucannon River Subbasin in southeast Washington covers approximately 500 square miles. The Tucannon River originates at about 6,400 feet on Oregon Butte in the Blue Mountains, and flows about 50 miles to the Snake River. The river and its tributaries derive solely from precipitation and groundwater, with the highest flows in May and the lowest in August.

The subbasin contains cropland, both dry and irrigated, rangeland and forests. The Umatilla National Forest covers a portion of the subbasin. Water is diverted for irrigation in the lower river valley, but the diversions have not been considered to pose significant problems for salmon. A recently modified dam may impede anadromous fish migration. Elevated temperatures and sedimentation pose the biggest limitations for salmon production in the Tucannon subbasin.

The indigenous anadromous fish species most actively targeted for management in the Tucannon River Subbasin are fall chinook, spring chinook, and summer steelhead. The goal for these species is to restore sustainable, naturally producing populations to support tribal and non-tribal harvest and cultural and economic practices while protecting the biological integrity and the genetic diversity of the watershed.

Resource problems are few, with two exceptions, sedimentation and high temperatures. Summer water temperatures in the lower reaches of these streams often exceeds 80^{o} F. Although the middle and lower reaches of these streams are degraded, the upper portions are fairly pristine with summer water temperature maximums of less than 60^{o} F (Martin et al. 1992). In the upper reaches, bull trout, spring chinook salmon and steelhead trout thrive (Martin et al. 1992).

To address these problems, and to attempt to achieve the goals, the co-managers have adopted the following outcome-based objectives: 1. Improve adult pre-spawning survival by reducing water temperatures; 2. Improve juvenile survival by reducing water temperatures; and 3. Utilize supplementation to increase natural production.

The broad general strategies used to achieve these objectives include improving habitat through the use of instream structures and passage improvements at barriers and increasing adult returns to supplement natural production and provide fish for harvest.

Specific actions critical to carrying out these strategies are funded under projects #9401805, 9401806 and 9401807. These two projects now incorporate the activities that were funded under project #9202602. These projects fund an Eastern Washington Model Watershed Coordinator through the Washington State Conservation Commission to develop model watershed plans for Asotin Creek, Tucannon River, and Pataha Creek and coordinate habitat improvement work on private lands. These projects fund Washington conservation districts to work with landowners to implement the model watershed plans for the Asotin Creek, Tucannon River, and Pataha Creek model watersheds.

There is clear consensus among the fisheries managers of the region that water temperatures are too high for salmonids in these streams from their mid-reach locations downstream to their mouths from June through October (CTUIR 1989) and that cooler water temperatures are mandatory for recovery of listed salmonids (WDFW 1997). Further, all agree that the only way to decrease water temperatures in these streams is to re-establish a fully functional riparian zone. This requires that young trees be protected from predation, primarily predation by beaver and livestock. It also requires willing landowners. Willing landowners, those who did not have to agree to any contracts or accept trees as a requirement of an in-stream habitat project, were found in 1997 and 1998 and in excess of 5,000 trees on their property along the Touchet River, Asotin Creek, and the Tucannon River with volunteer effort (Johnny Johnston, per com.) . Furthermore, livestock, if present, were excluded from the planted areas with individual tree exclosures, or entire site fences. Based on the number of willing landowners in 1997 and 1998 in these basins, we are confident that there will be more sites to revegetate in the next three years than we can get to.

The overall survival rate of trees prepared and planted by Johnny Johnston in 1998 was excess of 70%. Survival rates for trees prepared and planted by others, Salmon Corps, school-age volunteers, WDFW, and landowners was less than 30% for the same time period. Although not scientifically tested or defensible at this time, techniques used by Johnny Johnston result in substantially increased survival and therefor improved chance of re-establishing the riparian zone in areas that are currently deficient.

b. Rationale and significance to Regional Programs

The proposed project's goal is to establish woody riparian species at sites of the Tucannon River and Asotin Creek that are devoid of natural. The relationships of the project goal to the 1994 Fish and Wildlife Program are numerous, including the Programs's goal of doubling the number of salmon and steelhead runs without loss of biological diversity. Without natural production in healthy streams, doubling the number of salmon and steelhead will require hatcheries and artificial production, which has been shown to reduce biological diversity. The goal has an ancillary statement in the Program that reads, "The first goal is to halt declines in the populations and rebuild populations to a biologically sustainable level by the year 2000". Biologically sustainable levels will require healthy stream conditions.

The Fish and Wildlife Program has developed six principles to help focus efforts toward the "doubling goal". One of these principles is to give special priority to projects that are part of model watersheds or other coordinated watershed programs, especially those with local community involvement. The model watershed programs of Asotin Creek and the Tucannon River have demonstrated their ability to implement in-stream habitat projects and associated riparian revegetation at these project sites. This proposed project, will function cooperatively with those ongoing efforts and ensure that the riparian zone is established and connected from the top of each basin to their mouths. Next, this project, aimed at improving water temperature conditions and, therefore, increasing the distribution of naturally produced salmonids addresses the Program's principle that deals with the concern over the basin's salmon carrying capacity and the effects of hatchery produced fish on those that spawn naturally

The Columbia River Anadromous Fish Restoration Plan of the Nez Perce, Umatilla, Warm

Springs, and Yakama tribes, entitled WY-KAN-USH-MI-WA-KISH-WIT, (CRITFIC 1995) also emphasizes natural production by native stocks and emphasize the need to have fully functional healthy stream systems.. Natural production by native stocks is difficult to achieve if naturally produced fish are exposed to unnecessary environmental conditions. Suppression of naturally produced fish distribution within a stream due to excessive water temperatures is well documented. By keeping water temperatures cool through the mid-reaches of a stream, we can ensure that water temperatures near the mouth of each stream will be lower than the critical levels they are currently at.

c. Relationships to other projects

The Tucannon River and Asotin Creek model watershed programs are currently funded by BPA and are critical projects to this proposed project's success. In-stream habitat projects, riparian fencing, and alternative water access projects are currently administered and being implemented by these programs. Typically, the projects that the model watersheds implement contain multiple activities and have not been solely for riparian restoration. What we propose to do is offer land owners a fully-funded, no cost-share opportunity to allow us to plant trees on their property.

Currently the USFS is planting conifer trees along these streams to stabilize stream banks, provide wildlife habitat, and ultimately offer shade to the streams. Related to their efforts, hardwood riparian species planted on state and private land downstream will provide opportunity to meet our united goal of cooling water temperatures.

d. Project history (for ongoing projects)

Although there is no project history with BPA, Johnny Johnston has been volunteering considerable amounts of time and money to ensure that "donor" trees are marked and will be ready for us to cut whips off of next spring. Furthermore, he has established a preliminary nursery at the Quonset hut on WDFW land on the Hartsock Unit along the Tucannon River.

5. Proposal objectives

1. Identify riparian sites to revegetate on the Tucannon River and Asotin Creek.

We will meet with landowners to identify sites to revegetate, mark the locations to revegetate and decide on a predator exclusion technique.

2. Acquire nursery stock to meet site revegetation needs on the Tucannon River and Asotin Creek.

We will mark donor trees from which whips may be cut. Whips will be cut in the spring of 2000, and, depending on the number of whips and rooted stock trees needed, they will be distributed to one category or the other.

3. Plant whips and rooted stock woody riparian species on the Tucannon River and Asotin Creek.

Based on the number and location of trees needed to plant each site as determined in the previous fall with the landowners, trees will be whips will be planted in early spring and rooted stock will be planted in the summer.

4. Monitor planting success (survival) on the Tucannon River and Asotin Creek

In the fall of 2000, each site will be visited and the number of trees that were planted that are dead will be divided by the

number that are alive to determine the survival rate. This will be done for those planted as whips planted in early spring and those planted as rooted stock in the summer months.

5. Present planting data and results.

This is a significant objective as riparian revegetation efforts in the arid eastern portion of the Snake River basin have generally been a failure. The findings of this project have considerable implications for fish managers in the pacific northwest, and elsewhere. Due to the importance of our findings, we will dedicate a site on the WDFW Internet web page on which our findings will be presented. A report of our results will be mailed to fish managers of CRITFIC, CTUIR, the Nez Perce Tribe, ODFW, and IDFG, COE, USFS, and NMFS. Public presentations will be given in Clarkston, Walla Walla, Kennewick, and Wenatchee. The ISRP, CBFWA, Governor's task force for salmon recovery, BPA, and regional universities will receive a report of our findings.

Assumptions:

1. By planting sites devoid of woody riparian species we will achieve desirable water temperatures sooner than allowing sites to naturally revegetate themselves.

2. Hand planting whips (willow sp. and cottonwood sp.) in early spring and rooted stock in late spring and summer will result in higher site revegetation rates than natural site revegetation rates.

3. Other publically funded programs aimed at recovering salmonid species and decreasing water temperatures will not be implemented on project sites that this project is focusing on.

f. Methods

Each site will be identified in the fall and winter and plant number and locations will be determined and marked on-site. If livestock graze in the vicinity, individual tree exclosures will be prepared or the site will be fenced off, the choice is up to the land owner.

In February, March and April, fresh cut, native dormant stock willow and cottonwood will be cut and either be used fresh as whips, or planted into potting media for rooted stock to be planted in the summer months. In either case, a fresh cut whip must be placed to soak in water within 24 hours of cutting or discarded. As the air temperature rises the time in which a whip may be left out of water decreases. If a whip will be used for rooted stock, it must be soaked in rooting hormone and potted in a soil mixture containing 20% sand and 80% soil. Either biodegradable pots (8" tall) or burlap wraps may be used. Potted trees are to be watered as needed and maintained cool by storage in a shaded location. If a whip is to be used directly, it must be planted within 10 days of cutting.

In early spring (March and April), fresh cut, dormant stock willow sp. and cottonwood sp. will be directly planted into holes dug either by hand, gas powered augur, or back hoe. Holes will be dug at an elevation equal to or higher than the ordinary spring time water line (subjective location but typically one foot lower than the Ordinary High Water Line). The holes will be no less than 12" deep and will be back-filled with sandy loam soils. The whip will be planted into the backfilled material and watered to saturation. Each whip will be marked with biodegradable flagging for monitoring.

In late spring and summer, rooted stock willow and cottonwood species will be planted into holes dug at or above the ordinary spring time water line, as described above. This "mark" will be obvious, because whips planted in the spring will be marked at the line.

Regardless of season, trees will be planted no closer than 5' from each other parallel to the river and 5' from each other perpendicular to the river (a 5 x 5 grid pattern). Generally, in the early spring every other tree within a row will be planted, and then in summer, the opposite tree location will be planted.

g. Facilities and equipment

A 1-ton truck with a dump bed and a utility trailer will be needed to haul soils to back-fill holes in which the trees will be planted. A gas powered hand auger and a small trailer with a bucket and back hoe will be needed to dig the holes and transport the soil to the sites. The nursery and water will be provided by WDFW at their Hartsock Habitat Unit Quonset hut building on the Tucannon River.

h. Budget

Personnel requests are for a field technician and a small percentage of my time as project investigator and manager. I will be involved on a weekly basis coordinating activities, and being involved to address information requests, budgetary oversight, and project oversight. Estimated fringe benefits for state employees are 28.5% of salaries. Indirect costs are estimated to be 22.5% in FY 2000.

Supplies include field gear, a 1-ton truck with a dump bed, a gas powered hand held auger, a small tractor with a back-hoe and a bucket and a utility trailer. These pieces of equipment are necessary for digging holes in cobble streambanks and to transport high-quality soils to back-fill the holes in which the trees will be planted.

Section 9. Key personnel

Project Manager and Principal Investigator:Principal Investigator:

Steven Martin, Fish Biologist 3. 0.1 FTE

Duties: Directly responsible for experimental design, project implementation, equipment procurement, personnel hiring and supervising.

Degrees Earned: Eastern Washington University: BS - Biology 1990 MS - Fisheries Biology 1992

Current Employer: State of Washington, Department of Fish and Wildlife

Current Responsibilities: Conducting research, monitoring, and evaluating the Lower Snake River Compensation Salmon and Steelhead program. Supervise a diverse work crew, procure equipment, write annual reports and publications.

Previous Employment: State of Washington Department of Fish and Wildlife, Snake River Fish Habitat Biologist.

Expertise: Experimental design, field methods, salmonid ecology, hatchery production, sport fishing, and research presentations.

Publication (5 max):

Martin, S.W. et. al. 1993. Investigations of the interactions among hatchery reared summer steelhead, rainbow trout, and wild spring chinook salmon in southeast Washington. Project report.

Martin, S. W., T. N. Pearsons, and S. A. Leider. 1994. Rainbow and steelhead trout temporal spawning distribution in the upper Yakima River basin. Annual report.

Martin, S.W., J.A. Long and T.N. Pearsons. 1995. Comparisons of survival, gonad development, and growth between rainbow trout with and without surgically implanted

dummy radio transmitters. North American Journal of Fisheries Management. 15:494-498.

Martin, S. W. 1995. Salmonid distribution and rainbow trout population abundance variation in the upper Yakima River. Annual report.

Martin, S.W. 1992. Investigations of bull trout, steelhead trout, and spring chinook salmon interactions in southeast Washington streams. Master's Thesis, 1992.

Additional Key Personnel: Field Technician

Johnny Johnston, Scientific Technician 4.

Duties: Directly responsible for maintaining the nursery, identifying project sites, preparing and planting native stock, and monitoring sites.

Degrees Earned:

Current Employer: State of Washington, Department of Fish and Wildlife

Current Responsibilities: Act independently in the field and sample fishermen, operate vehicles, and assist other WDFW personnel with various field activities.

Previous Employment: State of Washington Department of Fish and Wildlife, Snake River Fish Habitat Biologist.

Expertise: Native vegetation nurseryman 1997 and 1998. Native riparian tree planting expertise and familiarity of local landowners.

Publication (5 max): Johnston, J.O. 1998. Tucannon Riparian Habitat Restoration Project: Progress Report. WDFW. Dayton, Wa.

Johnston, J.O. 1997. Tucannon Riparian Habitat RestorationProject: Progress Report. WDFW. Dayton, Wa.

Section 10. Information/technology transfer

The findings of this project have considerable importance for fish managers in the pacific northwest, and elsewhere. Due to the importance of our findings, we will dedicate a site on the WDFW Internet web page on which our findings will be presented. A report of our results will be mailed to fish managers of CRITFIC, CTUIR, the Nez Perce Tribe, ODFW, and IDFG, COE, USFS, and NMFS. Public presentations will be given in Clarkston, Walla Walla, Kennewick, and Wenatchee. The ISRP, CBFWA, Governor's task force for salmon recovery, BPA, and regional universities will receive a report of our findings.

Technologies used in this study are fairly well demonstrated and proven. If new technology is developed or used, it's application in this study will be transferred to the other agencies and universities stated above.**Congratulations!**